



**DIRECTORATE GENERAL FOR INTERNAL POLICIES**  
**POLICY DEPARTMENT A: ECONOMIC AND SCIENTIFIC POLICIES**

**ECONOMIC AND MONETARY AFFAIRS**

**How to deal with sovereign default in  
Europe:  
Towards a Euro(pean) Monetary Fund**

**NOTE**

**Abstract**

The turmoil affecting southern euro area countries (notably Greece) has ushered in the second phase of the financial crisis: that of sovereign default. It is now time to look for a new framework that allows the Euro zone to deal with the failure of one of its members. The solution would be the creation of a Euro(pean) Monetary Fund (EMF). The two key advantages of the EMF proposed by us are that its financing mechanism should give clear incentives for countries to keep their fiscal house in order at all times and, perhaps even more important, it could provide for an orderly sovereign bankruptcy procedure. Both these features would decisively lower the moral hazard problem that pervades the present situation in which both the markets and the Greek government assume that, in the end, they can count on a bailout because the EU could not contemplate the bankruptcy of one of its members.

This document was requested by the European Parliament's Committee on Economic and Monetary Affairs.

## **AUTHOR**

Daniel Gros  
Director, CEPS  
in collaboration with Thomas Mayer Chief Economist with Deutsche Bank Group, London

## **RESPONSIBLE ADMINISTRATOR**

Arttu MAKIPAA  
Policy Department Economic and Scientific Policies  
European Parliament  
B-1047 Brussels  
E-mail: [poldep-esc@europarl.europa.eu](mailto:poldep-esc@europarl.europa.eu)

## **LINGUISTIC VERSIONS**

Original: [EN]

## **ABOUT THE EDITOR**

To contact the Policy Department or to subscribe to its monthly newsletter please write to: [poldep-esc@europarl.europa.eu](mailto:poldep-esc@europarl.europa.eu)

Manuscript completed in September 2009.  
Brussels, © European Parliament, 2009.

This document is available on the Internet at:  
<http://www.europarl.europa.eu/activities/committees/studies.do?language=EN>

## **DISCLAIMER**

The opinions expressed in this document are the sole responsibility of the author and do not necessarily represent the official position of the European Parliament.

Reproduction and translation for non-commercial purposes are authorized, provided the source is acknowledged and the publisher is given prior notice and sent a copy.

<b>1. Introduction</b>	<b>1</b>
<b>2. The Euro(pean) Monetary fund</b>	<b>2</b>
2.1. Financing mechanism	3
2.2. Conditionality	4
2.3. Enforcement	4
<b>3. Orderly default</b>	<b>4</b>
<b>4. Concluding remarks</b>	<b>7</b>
<b>Annex 1. Argentina: Brief chronology of the run-up to the 2001 crisis</b>	<b>8</b>
<b>Annex 2. The vulnerability index</b>	<b>9</b>
<b>Annex 3. Private and public debt</b>	<b>11</b>
<b>References</b>	<b>12</b>



## 1. INTRODUCTION

The case of Greece has ushered in the second phase of the financial crisis, namely that of sovereign default.<sup>1</sup> Members of the euro area were supposed to be shielded from a financial market meltdown. But, after excess spending during the period of easy credit, several euro area members are now grappling with the implosion of credit-financed construction and consumption booms. Greece is the weakest of the weak links, given its high public debt (around 120% of GDP), compounded by a government budget deficit of almost 13% of GDP, a huge external deficit of 11% of GDP and the loss of credibility from its repeated cheating on budget reports.

Greece – as well as others in the EU, notably Portugal and Spain – must thus undergo painful adjustment in government finances and external competitiveness if their public debt position is to become sustainable again. But given the intense pressure from financial markets, it is likely<sup>2</sup> that in some cases a tough fiscal adjustment programme (or rather the promise that one will be forthcoming) might not be enough to avoid a ‘sudden stop’ of necessary external funding of the public sector. When this happens the EU will no longer be able to fudge the question of whether (and in what form) it can provide public financial support to one of its members.

Which institution would be best placed to design and supervise the tough adjustment programme that would justify such financial support: the EU or the IMF? The difference boils down to this: the IMF has money, expertise and few political constraints, but is helpless in the face of a determined offender, as the case of Argentina in 2001 shows (as chronicled in the Annex). The EU institutions also have money and expertise, but it has been argued (by Pisani-Ferry & Sapir, 2010, for example) that the EU, or, to be more precise, the European Commission, would not be up to the task, because it would face serious political constraints in devising a tough adjustment programme. Whether or not this is true depends in the final analysis on the stance taken by Germany, the member state whose financing power would be indispensable (for a view from Germany, see Issing, 2009, 2010).

But the question is not whether the EU would be ‘softer’ than the IMF. The key consideration should be which institution would have the stronger enforcement mechanisms in case Greece simply does not implement the adjustment programme. The IMF can do very little if the country in question just does not live up to its promises, except withhold further funding.<sup>3</sup> By contrast, the EU has several other instruments at its disposal: it can withhold funding from its structural (and other) funds. Moreover, the ECB (which is one of the European institutions) could exert enormous pressure by disqualifying Greek public debt (or even generally Greek assets) for use under its monetary policy operations. Most importantly, we argue below that the EU could design a

---

<sup>1</sup> Rogoff & Reinhart (2009) show that historically big financial crises are followed by an increased frequency of sovereign default.

<sup>2</sup> The Credit Default Swaps (CDS) spreads quoted (and paid) on the public debt of Greece and other Southern European Member States suggest that in the eyes of financial markets the probability of a default is substantial. For example, a five year CDS spread of 350 basis points (or the equivalent in terms of a higher yield on a five year bond) implies that the probability of a partial default under which bond holders receive 70% of the face value is over 10%.

<sup>3</sup> Calling in the IMF has other drawbacks: it would destroy any prospect of a common euro area representation in the IMF (and the international financial institutions in general). Moreover, policy-making at the IMF is dominated by the US, with the result that sometimes for political reasons the IMF might actually be more lenient. As Hale (2010) observes, no country with a US military base has ever been let down. Greece is a member of NATO and hosts important US bases.

scheme capable of dealing with sovereign default. If the IMF were called in to help but Greece eventually did not comply with the conditions of a support programme, the problem would only have been magnified. Greece would retain its main negotiating asset, namely the threat of a disorderly default, creating systemic financial instability at the EU and possibly global level. This dilemma could be avoided by creating a 'European Monetary Fund' (EMF), which would be capable of organising an orderly default as a measure of last resort.

## 2. THE EURO(PEAN) MONETARY FUND

The EMF proposal can also be seen as a complement to the ideas presently under discussion for allowing orderly defaults of private financial institutions and rescue funds for large banks that would be funded by the industry itself. The analogy holds in more general terms: in the recent financial crisis, policy has been geared solely towards preventing failure of large institutions. *In the future, however, the key policy aim must be to restore market discipline by making failure possible.* For EMU this means that the system should be made robust enough to minimise the disruption caused by the failure of one of its member states.

Purists will object to our scheme on the ground that it violates the 'no bail-out' provision of the Maastricht Treaty.<sup>4</sup> However, we would argue that our proposal is actually the only way to make the no bail-out rule credible, and thus give teeth to the threat not to bail out in reality. The drafters of the Maastricht Treaty had failed to appreciate that, in a context of fragile financial markets, the real danger of a financial meltdown makes a 'pure' no-bail-out response unrealistic. As with the case of large, systemically important banks, market discipline can be made credible only if there are clear provisions that minimise the disruptions to markets in case of failure.

Member countries of the EU have signed up to the principle of solidarity, which is enshrined in numerous passages of the Treaty. Hence, they can expect to receive support when faced with extraordinary financing difficulties. At the same time, the principle of solidarity also implies that those countries that might in future constitute a burden on the Community should contribute to building up the resources needed for a potential support effort. Both considerations apply in particular to the euro area. Its member countries have tied their economies tightly together by sharing the same currency. Problems in any euro area member country are bound to have strong negative spill-over effects for its partners. From this follows a particular responsibility of euro area member countries to avoid creating difficulties for their partners. This is the political logic underlying the Maastricht criteria for fiscal policy and the Stability Pact. The proposed EMF (which could be set-up under the concept of "enhanced cooperation" established in the EU Treaty) would be a concrete expression of this principle of solidarity.

Any mutualisation of risks creates a moral hazard because it blunts market signals. This would argue against any mutual support mechanism and reliance on financial markets to enforce fiscal discipline. However, experience has shown repeatedly that market signals can remain weak for a long time and are often dominated by swings in risk appetite which can be quite violent. Hence, in reality the case for reliance on market signals as an enforcement mechanism for fiscal discipline is quite weak. In fact, swings in risk appetite and other forces that have little to do with the credit-worthiness of a country can lead to

---

<sup>4</sup> Article 125 of the Consolidated EU Treaty (formerly Article 123 TEC).

large swings in yield differentials and even credit rationing that have little to do with economic fundamentals.

The moral hazard problem can never be completely neutralised, but for our proposal it could be limited in two ways: through the financing mechanism of the EMF and conditionality attached to its support. These points will be discussed first, followed by a brief analysis of two equally important issues, namely enforcement and orderly default.

## 2.1. Financing mechanism

A simple mechanism to limit the moral hazard problem would be the following: only those countries that breach the Maastricht criteria have to contribute. The contribution rates would be calculated on the following bases:

1% annually of the stock of 'excess debt', which is defined as the difference between the actual level of public debt (at the end of the previous year) and the Maastricht limit of 60% of GDP. For Greece with a debt-to-GDP ratio of 115%, this would imply a contribution to the EMF equal to 0.55%. 1% of the excessive deficit, i.e. the amount of the deficit for a given year that exceeds the Maastricht limit of 3% of GDP. For Greece, the deficit of 13% of GDP would give rise to a contribution to the EMF equal to 0.10% of GDP. Thus, the total contribution for Greece in 2009 would have been 0.65% of GDP.

The contributions should be based on both the deficit and the debt level because both represent warning signs of impending insolvency or liquidity risk (this is also the reason why both were included in the Maastricht criteria and both matter for the Stability Pact, although in practice the debt ratio has played less of a role). It could be argued that contributions should be based on market indicators of default risk rather than the suggested parameters. But the existence of the EMF would depress CDS spreads and yield differentials among the members of the EMF, making such a procedure impossible.<sup>5</sup> Moreover, the EMF should be given the authority to borrow in the markets to avoid that its accumulated contributions fall short of the requirements of funds. Contributions would be invested in investment-grade government debt of euro area member countries. Debt service (in case funds had to be raised in the market) would be paid from future contributions.

Countries with exceptionally strong public finances would not need to contribute because they would de facto carry the burden should a crisis materialise. Their backing of the EMF (and the high rating of their bonds in the portfolio of the EMF) would be crucial if the EMF were called into action.<sup>6</sup>

It could be argued that taxing countries under fiscal stress to fund the EMF would only aggravate their problems. However, most contributions would have to be paid on account of moderate debt levels long before a crisis arises

<sup>5</sup> Something else would reinforce graduated pressure on countries with weak fiscal policies: an adjustment of the risk weighting under Basle II. The risk weight for government debt is at present 0 for governments rated AAA to A, and only 20% until A- (implying that banks have to hold only  $0.2 \times 8\% = 1.6\%$  of capital against holdings of the debt of governments which might have lost over 10% in value. There is no reason why euro area government debt should have a systematically lower risk weighting than corporate debt, for which the risk weights are 20% and 50%, respectively.

<sup>6</sup> An analogy with the IMF illustrates the underlying logic:

All countries contribute pro rata to the financing of the IMF, which enables it to lend to provide financing to those member countries in need because of balance-of-payments problems.

With the suggested funding mechanism, the EMF would have been able to accumulate €120 billion in reserves since the start of EMU – enough probably to finance the rescue of any of the small-to-medium-sized euro area member states. Of course, this is just an illustrative calculation since it is highly likely that actual deficits (and hence over time debt levels) would have been much lower, given the price countries would have had to pay for violating the Maastricht criteria.

Concerning the form of intervention, in principle the EMF could provide financial support in one of two ways: it could sell part of its holdings (or raise funds in the markets) and provide the member country with a loan, or it could just provide a guarantee for a specific issuance of public debt. The following discussion assumes that the second approach will be pursued.

## 2.2. Conditionality

There should be two separate stages:

- *Stage I:* Any member country could call on the funds of the EMF up to the amount it has deposited in the past (including interest), provided its fiscal adjustment programme has been approved by the Eurogroup.<sup>7</sup> The country in question could thus issue public debt with a guarantee of the EMF up to this amount.
- *Stage II:* Any drawing on the guarantee of the EMF above this amount would be possible only if the country agrees to a tailor-made adjustment programme supervised jointly by the Commission and the Eurogroup.

With the EMF in operation, a crisis would be much less likely to arise. However, should a crisis arise the EMF could swing into action almost immediately because it would not have to undertake any large financial operation beforehand. A public finance crisis does not appear out of the blue. A member country encountering financial difficulties will have run large deficits for some time and its situation will thus have been closely monitored under the excessive deficit procedure.

## 2.3. Enforcement

The EU has a range of enforcement mechanisms in case the country in question does not live up to its commitments: as a first step, new funding (guarantees) would be cut off. This is standard, but the EU can do much more. Funding under the structural funds could also be cut off (this is already foreseen, in a weak form, under the Stability Pact) as well. For a country like Greece, this could amount to about 1-2% of GDP annually. Finally the country could effectively be cut off from the euro area's money market when its government debt is no longer eligible as collateral for the ECB's repo operations. The key point here is that these sanctions can be applied in an incremental manner and that they impose considerable economic and political costs on any country contemplating not implementing a previously agreed programme.

## 3. ORDERLY DEFAULT

A key aspect of the discussion on the financing difficulties of Greece (and other Southern euro area member countries) is often overlooked: the need to prepare for failure! The

---

<sup>7</sup> In formal terms this would mean that the country is faithfully implementing its programme and that no recommendation under Article 126.7 has been formulated within the excessive deficit procedure.

strongest negotiating asset of a debtor is always that default cannot be contemplated because it would bring down the entire financial system. This is why it is crucial to create mechanisms to minimise the unavoidable disruptions resulting from a default. Market discipline can only be established if default is possible because its cost can be contained.

A key advantage of the EMF would be that it could also manage an orderly default of an EMU country that fails to comply with the conditions attached to an adjustment programme. A simple mechanism, modelled on the successful experience with the Brady bonds, could do the trick. To safeguard against systemic effects of a default, the EMF could offer holders of debt of the defaulting country an exchange of this debt with a uniform haircut against claims on the EMF.

This would be a key measure to limit the disruption from a default. A default creates ripple effects throughout the financial system because all debt instruments of a defaulting country become, at least upon impact, worthless and illiquid (for more on default risks, see Biggs et al., 2010). However, with an exchange à la Brady bonds, the losses to financial institutions would be limited (and could be controlled by the choice of the haircut).

How drastic should the haircut be? The Maastricht fiscal criteria offer again a useful guideline. The intervention of the EMF could be determined in a simple way: the EMF could declare that it would only be willing to invest an amount equal to 60% of the GDP of the defaulting country. In other words, the haircut would be set in such a way that the amount the EMF has to spend to buy up the entire public debt of the country concerned is equal to 60% of the country's GDP. This would imply that for a country with a debt-to-GDP ratio of 120%, the haircut would be 50%, as the EMF would 'pay' only 60/120. Given that the public debt of Greece is now already trading at discounts of about 20% (for longer maturities), this would mean only a modest loss rate for those who bought up the debt more recently. Of course, the size of the haircut is also a political decision that will be guided by a judgement on the size of the losses that creditors can bear without becoming a source of systemic instability. But uncertainty could be much reduced if financial markets are given this approach as a benchmark based on the Maastricht criteria.

Moreover, the EMF would exchange only those obligations that were either traded on open exchanges or had been previously registered with the special arm of the EMF dealing with the verification of public debt figures. This means the obligations resulting from secret derivative transactions would not be eligible for the exchange. This would be a strong deterrent against using this type of often-murky transaction with which governments try to massage their public finances. The financial institutions that engage in these transactions would know that in case of failure they would be last in line to be rescued and would thus become much less interested in proposing and executing them. Especially in times of crisis, all creditors would have a strong incentive to come forward to register their claims on the government in financial difficulties. At present, the opposite seems to be the case. The financial institutions that concluded these derivative transactions are only interested in covering up the role they played in hiding the true state of the public finances of the countries now facing difficulties.

In return for offering the exchange of bona fide public debt against a haircut, the EMF would acquire all the claims against the defaulting country. From that time onwards, any additional funds the country would receive could be used only for specific purposes approved by the EMF. Other EU transfer payments would also be disbursed by the EMF under strict scrutiny, or they could be used to pay down the debt owed by the defaulting

country to the EMF. Thus, the EMF would provide a framework for sovereign bankruptcy comparable to the Chapter 11 procedure existing in the US for bankrupt companies that qualify for restructuring. Without such a procedure for orderly bankruptcy, the Community could be taken hostage by a country unwilling to adjust, threatening to trigger a systemic crisis if financial assistance is not forthcoming.

Member states of the EU remain sovereign countries. A defaulting country may regard such intrusion into its policies by the EMF as a violation of its sovereignty and hence unacceptable. But an E(M)U member country that refused to accept the decisions of the EMF could leave the EU, and with this, EMU,<sup>8</sup> under Article 50 of the Treaty.<sup>9</sup> The price for doing so would of course be much greater than that exacted in the case of the default of Argentina. If a country refused all cooperation and did not leave the EU on this own, it could effectively be thrown out by recourse to Article 60 of the Vienna Convention on International Treaties, or Article 7 of the Treaty of Lisbon could be invoked.

---

<sup>8</sup> For the legal issues surrounding a withdrawal from the euro area, see ECB (2009).

<sup>9</sup> Article 50 of TEU:

1. Any Member State may decide to withdraw from the Union in accordance with its own constitutional requirements.
2. A Member State which decides to withdraw shall notify the European Council of its intention. In the light of the guidelines provided by the European Council, the Union shall negotiate and conclude an agreement with that State, setting out the arrangements for its withdrawal, taking account of the framework for its future relationship with the Union. That agreement shall be negotiated in accordance with Article 218(3) of the Treaty on the Functioning of the European Union. It shall be concluded on behalf of the Union by the Council, acting by a qualified majority, after obtaining the consent of the European Parliament.

## 4. CONCLUDING REMARKS

We argue that setting up a European Monetary Fund to deal with euro area member countries in financial difficulties is superior to the option of either calling in the IMF or muddling through on the basis of ad hoc decisions. Without a clear framework, decisions about how to organise financial support typically have to be taken hurriedly, under extreme time pressure, and often during a weekend when the turmoil in financial markets has become unbearable.

We see two key advantages of our proposal: first, the funding of the EMF should give clear incentives for countries to keep their fiscal house in order at all times. Secondly, and perhaps even more important, the EMF could provide for an orderly sovereign bankruptcy procedure that minimises the disruption resulting from a default.

Both these features would decisively lower the moral hazard problem that pervades the present situation in which both the markets and the Greek government assume that, in the end, they can count on a bailout because the EU could not contemplate the bankruptcy of one of its members. *We should by now have learned that policy should not be geared towards preventing failure, but preparing for it.*

In addition, the EMF could contribute decisively to the transparency of public finances because its intervention mechanism in the case of failure would penalise all derivatives and other transactions that had not been previously registered with a special registry of public debt, which the EMF would maintain.

The creation of a European Monetary Fund should be seen as the best way to protect the interests of the (relatively) fiscally strong member countries. Without such an institution, a country like Germany would always find itself in a 'lose-lose' situation if a country like Greece is on the brink of collapse. If Germany agrees to a rescue package, it puts its public finances at risk. If it does not, its financial institutions would bear the brunt of the considerable losses that would arise from a disorderly failure and the ensuing contagion. Given the weak state of the German banking system, this would in the end also weaken German public finances.

Our proposal is not meant to constitute a 'quick fix' for a specific case. Greece is the problem today, but our analysis of its solvency situation suggests that this problem will not be solved in a matter of weeks or months. The experience of Argentina shows that default arises only after a lengthy period of several years in which economic and political difficulties interact and reinforce each other. Failure is not inevitable, as the relatively successful experience so far with tough adjustment programmes in Ireland and Latvia shows. But what is unavoidable is a considerable period of uncertainty. With an EMF, the EU would be much better prepared to face these difficult times.

If it were possible to create an EMF this year it might still be possible to have its principles applied to the Greek case. In this case it would of course be necessary to allow the EMF to finance itself on the market (e.g. issuing euro bonds) so that it would stand ready both to help Greece, and also to deal with the worst case scenario of a failure of the adjustment programme which has just started.

## **ANNEX 1. ARGENTINA: BRIEF CHRONOLOGY OF THE RUN-UP TO THE 2001 CRISIS**

In 1991, following decades of disastrous economic performance characterised by combinations of high deficits and inflation, Argentina embarked on a radical experiment. The old currency was replaced by a new one which was linked by currency board arrangement 1:1 to the US dollar. Initially the new arrangement worked very well. Growth returned and the confidence of foreign investors was such that large inflows of foreign direct investment, especially the banking sector, began to materialise.

However, later into the 1990s, problems developed. A series of external shocks (Asian and later Russian debt crises and especially the Brazilian devaluation of 1999) hit Argentina hard. Especially the latter meant that the Argentine currency had become overvalued. Growth slowed down, putting pressure on public finance and twin deficits (external and public sector) became pervasive. By 2000, investors started to worry about future developments, and the price of bonds issued by the Argentine government started to drop (at the time the CDS market had not yet developed as a measure of default probability).

In March 2000, the IMF approved a three-year stand-by credit (\$7.2 billion) to be treated as 'precautionary'. It replaced an expiring three-year EFF (Extended Financing Facility). The programme envisaged a resumption of growth, a decline in fiscal deficit and structural reforms. None of that was subsequently achieved. The economic difficulties then led to political problems. The Vice President resigned by the end of the year and the ruling coalition (the *Alianza*) started to crumble.

During this period it became clear that only a tough adjustment process, including an 'internal devaluation' via deflation and nominal wage cuts, could save the country. But this would not only require strong political will but also the cooperation of the social partners and the confidence of the public in general. The evolution of domestic banking sector deposits (see chart below with monthly data by the Central Bank) became the indicator to watch, and sure enough locals started withdrawing deposits. This was the beginning of the end.

Given the continuing external financing difficulties, the IMF granted Argentina an augmentation of the stand-by to \$14 billion in the first quarter of 2001, part of a 'mega-package' of loans by the World Bank, the IADB and the government of Spain. To restore investor confidence the government even roped in Domingo Cavallo, the architect of the currency board back in 1991, as a key minister.

However, the economic situation continued to deteriorate despite the massive financial aid. To reduce the need for refinancing of the stock of debt, in June of 2001 Cavallo proposed a voluntary debt restructuring, which succeeded, but only at the cost of double-digit interest rates (about 16%, higher in real terms given deflation). The IMF welcomed the restructuring and the high participation of foreign bondholders. One month later (July 2001) the government proposed (and congress approved) a 'zero-fiscal deficit' law. However, domestic depositors continued to flee.

In September 2001 the IMF again augmented the stand-by to \$22 billion. All along, the texts of the IMF releases read almost identically in terms of conditions and expectations (structural reform, etc.).

However, the economic and political situation continued to deteriorate in the last quarter of 2001. The opposition (the Peronists) won the mid-term elections. In November, international bonds held by locals were converted into 'guaranteed loans' backed by a financial transactions tax.

In December 2001, Cavallo announced restrictions on the withdrawal of sight deposits (saying that people could use debit cards to make payments – except that those were practically unknown in Argentina). This ushered in the end-game for the De la Rúa government: riots broke out and the president had to flee by helicopter. Parliament announced the default on \$130 billion of external debt.

Over the next few months (December 2001 to January 2002), there was a quick succession of presidents. The currency peg was abandoned. The (mostly foreign owned) banks were practically expropriated by the asymmetric (and forced) conversion of deposits and loans: USD-denominated loans were converted into pesos ('pesification'), at the old rate ARS/USD=1. Foreign currency deposits were initially frozen, but later (after the lifting of freeze) adjusted in value, and converted at a rate much closer to the market exchange rate, which reached ARS/USD=4 in Q1/2002. Regulatory forbearance over the following years prevented the system's bankruptcy.

Foreign creditors received later less than 30 cents on the dollar. It is noteworthy that the \$130 billion in foreign debt represented less than 50% of (pre-crisis) GDP for Argentina. By contrast, for Portugal and Greece, foreign debt now amounts to about 100% of GDP.

Figure A1. Argentina



Source: Maria Lanzeni, Deutsche Bank Research, 4 February 2010.

## ANNEX 2. THE VULNERABILITY INDEX

In order to measure the degree of a country's financial vulnerability to a sudden stop in external financing (and thus financial turmoil), three dimensions should be taken into account:

- the state of public finances (deficit and level of debt),

- the availability of national (both private and public) resources (savings) and
- the need for external finance and the competitive position as an indicator to service external debt.

For this purpose we combine five indicators.

Two concern the state of public finances: 1) the government debt-to-GDP ratio and 2) fiscal deficit-to-GDP ratio.

To these standard indicators, we add 3) net national savings as a share of national income. The latter, unlike the current account, does not simply inform about whether and how much a country as whole is borrowing but also whether the amount of national resources is sufficient to keep the level of existing capital constant.

The last two indicators measure the position of the country with respect to the rest of the world, namely, 4) its current account balance (as share of GDP) and 5) its relative unit labour costs. The latter provide a measure of competitiveness to assess the ability of a country to generate future export surpluses to service its external debt.

To make these various measures comparable, each one is standardized subtracting the (cross country) mean and dividing by the standard deviation. The overall vulnerability index is then simply the sum of the five standardised variables where national savings, fiscal balance and current account balance have a negative sign.

**Table A2. Vulnerability in the euro area**

	Gross debt (% GDP)	Fiscal balance (% GDP)	Nominal unit labour cost	Current account (% GDP)	Net National Savings (% national income)	Vulnerability index
Greece	1.9	-1.8	0.7	-1.2	-1.1	6.7
Portugal	0.4	-0.3	0.6	-1.6	-1.9	5.0
Ireland	0.4	-2.5	0.4	-0.1	-0.3	3.7
Italy	1.6	0.6	1.0	-0.1	-0.4	2.6
Spain	-0.2	-1.0	0.6	-0.6	-0.3	2.3
France	0.4	-0.4	-0.7	-0.1	0.0	0.2
Belgium	1.0	0.4	-0.4	0.5	0.5	-0.6
Netherlands	-0.2	0.3	0.7	0.9	0.4	-1.1
Finland	-0.9	0.8	0.1	0.5	0.2	-2.2
Austria	0.1	0.5	-0.7	0.5	0.7	-2.4

Germany	0.2	0.7	-2.4	1.0	0.5	-4.5
---------	-----	-----	------	-----	-----	------

Source: AMECO and own computations.

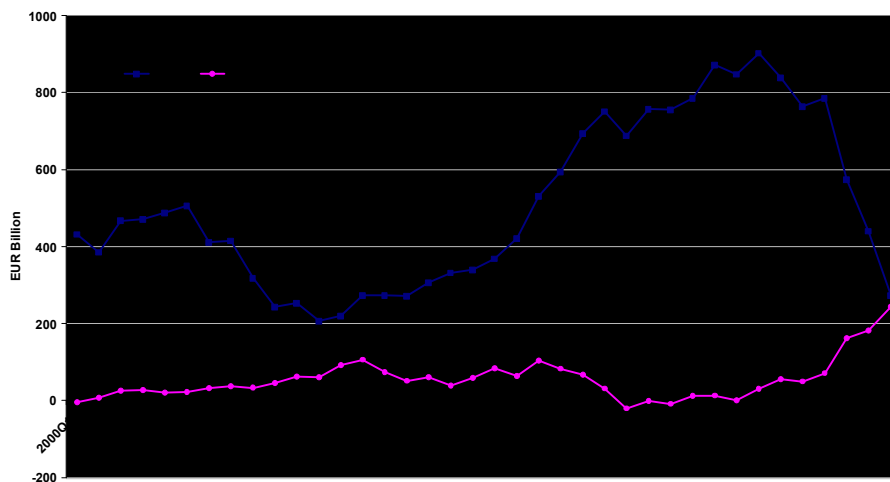
The table above shows the standardised values for each of the indicators applied to the 2010 forecast of the European Commission and the corresponding vulnerability index. Greece is the frontrunner as the most vulnerable country of the euro area, followed by Portugal, Ireland, Italy and Spain respectively.

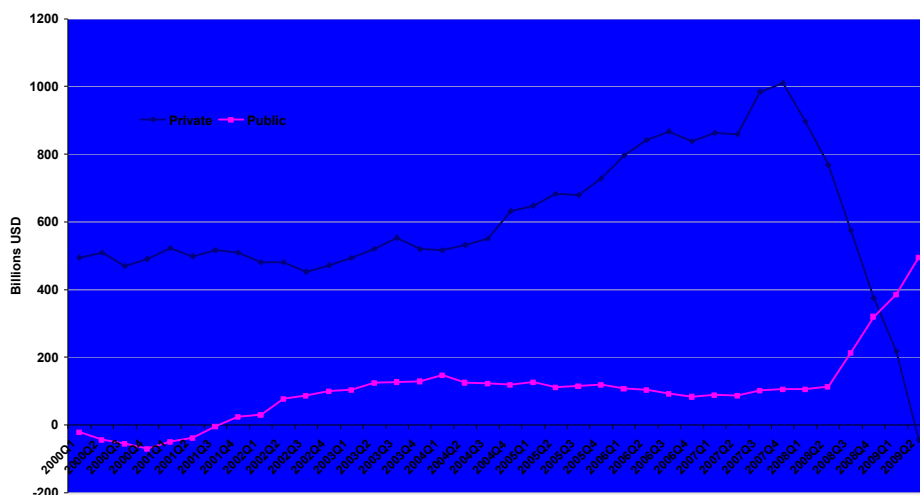
Analogous computations for the years between 2000 and 2009 suggest that the ranking did not change much over time. Since 2000, Greece, Portugal and Italy always appear on the top of the list. The real novelty is Ireland which has overtaken Spain in 2008 and even Italy in 2009. Of course the index does not account for the ongoing adjustment process. Unlike other countries, Ireland is already experiencing a painful adjustment in wages. In perspective, this puts Ireland in a better condition than its Mediterranean 'mates' even if it is still vulnerable.

### ANNEX 3. PRIVATE AND PUBLIC DEBT

Financial crises usually lead to a surge in public debt, which replaces private debt that has gone sour. The present crisis is no exception. Many European countries enjoyed credit-fuelled booms (in some cases, bubbles) with the private sector spending far more than its income and creating large current account deficits. When the crash came, the supply of creditworthy borrowers collapsed and so did private spending. Governments have responded by supporting the economy and in some cases bailing out the banking system with considerable effects on their fiscal position. The graphs below showing the evolution of public and private debt in the euro area and the United States support this argument for both regions. As the growth rate of private debt shrinks or becomes negative, public debt increases.

**Figure A3a. Euro area private and public debt (moving average of first difference over four quarters)**



**Figure A3b. US private and public debt (moving average of first difference over four quarters)**

## REFERENCES

- Biggs, M., P. Hooper, T. Mayer, T. Slok and M. Wall (2010), "The Public Debt Challenge", *Deutsche Bank Global Markets Research*, January.
- ECB (European Central Bank) (2009), *Withdrawal and expulsion from the EU and EMU: Some reflections*, Legal Working Paper Series No 10, December (<http://www.ecb.int/pub/pdf/scplps/ecblwp10.pdf>).
- Gros, D. and Mayer, Th. (2010) *Towards a Euro(pean) Monetary Fund*, CEPS Policy Brief No. <http://www.ceps.eu/book/towards-european-monetary-fund>
- Gros, D. (2010) *Adjustment Difficulties in the GIPSY Club*, CEPS, Working Document No. <http://www.ceps.eu/book/adjustment-difficulties-gipsy-club>
- Hale, D. (2010), "A mutually satisfactory solution for Iceland and Obama", *Financial Times*, 1 February
- Issing, O. (2009), "Berlin sorgt sich um Euro-Schuldenländer", *Frankfurter Allgemeine Zeitung*, 20 February (<http://www.faz.net/f30/common/Suchergebnis.aspx?rub={DCD0121E-AF59-41C6-8F20-91EC2636BA9D}&x=0&y=0&pge=2&allchk=1&term=Issing>).
- Issing, O. (2010), "Die Europäische Währungsunion am Scheideweg", *Frankfurter Allgemeine Zeitung*, 30 January (<http://www.faz.net/f30/common/Suchergebnis.aspx?term=Issing&x=0&y=0&allchk=1>).
- Mayer, T. (2009) "The case for a European Monetary Fund", *Intereconomics*, May/June.
- Munchau, W. (2010), "What the eurozone must do if it is to survive", *Financial Times*, 1 February.
- Pisani-Ferry, J. and A. Sapir (2010), "The best course for Greece is to call in the Fund", *Financial Times*, 2 February.
- Reinhart, C.M. and K.S. Rogoff (2009), *This Time is Different: Eight Centuries of Financial Folly*, Princeton, NJ: Princeton University Press.
- Roubini, N. (2010), "Spain Threatens to Shatter Euro Zone", 27 January (<http://www.bloomberg.com/apps/news?pid=20601085&sid=aVW11LBGT.08>)